

CASE NO.: ARC9-2000-0093-US1
Serial No.: 09/757,012
April 20, 2004
Page 2

PATENT
Filed: January 8, 2001

1. (currently amended) A computer-implemented method for generating a gain adjust signal to establish an audio output level, comprising:

receiving at least one person-microphone position signal representative of a position of a person relative to a microphone;

determining a gain adjust signal based at least in part on the person-microphone position signal; and

using the gain adjust signal to establish the audio output level, wherein the gain adjust signal is determined based at least partially on at least one of: a distance from a person's mouth to a microphone, an orientation of a person's head relative to the microphone, and a head location relative to a direction of sensitivity of a microphone.

2. (original) The method of Claim 1, wherein the person-microphone position signal is derived from a video system.

3. (canceled).

4. (original) The method of Claim 2, further comprising:
recording at least one calibration person-microphone position signal;
recording at least one calibration audio level; and
using the calibration signal and calibration level, generating at least one mapping.

1053-105.AM2

CASE NO.: ARC9-2000-0093-US1

Serial No.: 09/757,012

April 20, 2004

Page 3

PATENT

Filed: January 8, 2001

5. (original) The method of Claim 4, further comprising using the mapping to generate at least one gain adjust signal based on at least one person-microphone position signal.

6. (currently amended) The method of Claim 1A computer-implemented method for generating a gain adjust signal to establish an audio output level, comprising:

receiving at least one person-microphone position signal representative of a position of a person relative to a microphone;

determining a gain adjust signal based at least in part on the person-microphone position signal; and

using the gain adjust signal to establish the audio output level, wherein the person-microphone position signal is derived from a motion sensing system or a position sensing system or an orientation sensing system or a distance sensing system.

7. (currently amended) The method of Claim 1A computer-implemented method for generating a gain adjust signal to establish an audio output level, comprising:

receiving at least one person-microphone position signal representative of a position of a person relative to a microphone;

determining a gain adjust signal based at least in part on the person-microphone position signal; and

using the gain adjust signal to establish the audio output level, wherein the person-microphone position signal is derived from a laser system.

1003-105.AM2

CASE NO.: ARC9-2000-0093-US1
Serial No.: 09/757,012
April 20, 2004
Page 4

PATENT
Filed: January 8, 2001

8. (original) The method of Claim 1, wherein the gain adjust signal is determined contemporaneously with a recording of the person.

9. (currently amended) ~~The method of Claim 1A~~ computer-implemented method for generating a gain adjust signal to establish an audio output level, comprising:

receiving at least one person-microphone position signal representative of a position of a person relative to a microphone;

determining a gain adjust signal based at least in part on the person-microphone position signal; and

using the gain adjust signal to establish the audio output level, wherein the person-microphone position signal is recorded, then the gain adjust signal is determined after a recording of the person.

10. (currently amended) ~~The method of Claim 1A~~ computer-implemented method for generating a gain adjust signal to establish an audio output level, comprising:

receiving at least one person-microphone position signal representative of a position of a person relative to a microphone;

determining a gain adjust signal based at least in part on the person-microphone position signal; and

using the gain adjust signal to establish the audio output level, wherein the gain adjust signal is a fast response gain adjust signal, and the method further comprises determining a slow response gain adjust signal based on an audio stream.

1053-105.AM2

CASE NO.: ARC9-2000-0093-US1

Serial No.: 09/757,012

April 20, 2004

Page 5

PATENT

Filed: January 8, 2001

11. (original) A digital processor programmed to undertake logic for dynamically establishing a gain of an audio system, the logic including:

receiving a video stream representative of at least one person and at least one microphone;

deriving person-microphone position signals using the video stream; and

using at least some of the person-microphone position signals, generating audio gain adjust signals for input thereof to the audio system.

12. (original) The digital processor of Claim 11, wherein the logic further includes determining an audio gain adjust signal based at least partially on: a distance from a person's mouth to a microphone, or an orientation of a person's head relative to the microphone.

13. (original) The digital processor of Claim 12, wherein the logic further comprises:

recording at least one calibration person-microphone position signal;

recording at least one calibration audio level contemporaneously with the calibration person-microphone position signal; and

using the calibration signal and calibration level, generating at least one mapping.

14. (original) The digital processor of Claim 13, wherein the logic further comprises using the mapping to generate at least one gain adjust signal based on at least one person-microphone position signal.

1053-105.AM2

CASE NO.: ARC9-2000-0093-US1

Serial No.: 09/757,012

April 20, 2004

Page 6

PATENT

Filed: January 8, 2001

15. (original) The digital processor of Claim 11, wherein the gain adjust signal is determined contemporaneously with recording the person.

16. (original) The digital processor of Claim 11, wherein the person is recorded, then the gain adjust signal is determined after the recording of the person.

B

17. (original) A computer program product including:

computer readable code means for receiving light reflection signals representative of light reflected from a person and light reflected from a microphone;

computer readable code means for, based on the light reflection signals, determining an orientation signal; and

computer readable code means for generating an audio gain adjust signal based on the orientation signal.

18. (original) The computer program product of Claim 17, further comprising:

computer readable code means for recording at least one calibration person-microphone position signal;

computer readable code means for recording at least calibration one audio level; and

computer readable code means for, using the calibration signal and calibration level, generating at least one mapping.

1053-105.AM2

CASE NO.: ARC9-2000-0093-US1
Serial No.: 09/757,012
April 20, 2004
Page 7

PATENT
Filed: January 8, 2001

19. (original) The computer program product of Claim 18, further comprising computer readable code means for using the mapping to generate at least one gain adjust signal based on at least one person-microphone position signal.

20. (previously presented) An audio system, comprising:

at least one microphone electrically connected to at least one audio amplifier having at least one audio gain;

at least one video camera; and

at least one processor receiving signals from the video camera and establishing the audio gain in response thereto, wherein the processor determines a gain adjust signal based at least partially on: a distance from a person's mouth to a microphone as determined from the video camera signals, or an orientation of a person's head relative to the microphone as determined from the video camera signals.

21. (cancelled).

22. (original) The system of Claim 20, wherein the processor records at least one calibration person-microphone position signal and at least calibration one audio level, and uses the calibration signal and calibration level to generate at least one mapping useful in generating the gain adjust signal.

1053-103.AM2

CASE NO.: ARC9-2000-0093-US1

Serial No.: 09/757,012

April 20, 2004

Page 8

PATENT

Filed: January 8, 2001

23. (original) The system of Claim 20, further comprising a slow adjust filter using an audio stream to generate a slow gain adjust signal.

24. (currently amended) An audio system, comprising:

at least one microphone electrically connected to at least one audio amplifier having at least one audio gain;

at least one non-lens source of person-microphone position signals representative of at least one of: the distance between a person and the microphone, the angle between the head of a person and the microphone, and a head location relative to a direction of sensitivity of the microphone; and

at least one processor receiving signals from the source and establishing the audio gain in response thereto.

25. (original) The system of Claim 24, wherein the source is a video camera.

26. (original) The system of Claim 24, wherein the source is a motion sensing system of a laser system or a position sensing system or an orientation sensing system or a distance sensing system.

27. (original) The system of Claim 24, further comprising a slow adjust filter using an audio stream to generate a slow gain adjust signal.

1053-105.AM2

CASE NO.: ARC9-2000-0093-US1
Serial No.: 09/757,012
April 20, 2004
Page 9

PATENT
Filed: January 8, 2001

28. (original) The method of Claim 1, wherein the gain adjust signal is determined by selecting one of several microphone outputs based on head position.

29. (original) The system of Claim 24, wherein the source is an illumination-based pupil detector or a face detector.

1053-105.AM2